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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,729	07/09/2003	David B. Hall	NGC-146/000309-199	1802

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EXAMINER	
LYONS, MICHAEL A	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/615,729	HALL, DAVID B.	
	Examiner	Art Unit	
	Michael A. Lyons	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *030705*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: there is a blank line on page 1, line 10 of the specification that needs to be filled.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 10-16, and 21-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hall (6,122,057) in view of Kersey et al ("Novel passive phase noise canceling technique for interferometric fibre optic sensors.").

Regarding claims 1, 10, and 24, Hall discloses a method and corresponding apparatus comprising a sensor array 16 that employs a parameter to induce a time-varying phase angle on an optical signal that comprises a phase generated carrier (Col. 1, lines 54-60) along with a processor 28 that calculates the phase angle independent of the demodulation phase offset (see equation 13).

Hall, however, fails to disclose the filtering of an output signal from the sensor array to create a filtered signal that is used to calculate the angle as disclosed above.

Kersey, however, discloses a passive phase noise canceling technique that relies on demodulation to filter an interferometric signal prior to its final demodulation and detection for any desired signal processing.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to filter the interferometric signal of Hall as per Kersey in order to reduce or cancel the induced phase noise in the interferometer so that the calculation of the phase angle of the sensor array can be performed on a cleaner signal that would allow for more accurate calculated results.

As for claims 2, 11, and 25, see Col. 4, and equations 5-8 of Hall.

As for claims 3, 12, and 26, see Col. 4 – Col. 5, line 20, and equations 9-13 of Hall.

As for claims 4, 13, and 27, Hall discloses that the output signal comprises a period of Tpulse of the phase-generated carrier. However, Hall fails to disclose the more specific time period Ts that is less than or equal to Tpulse. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the specific time period of Ts in relation to Tpulse for the sampling time, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As for claims 5, 14, and 28, see Col. 4 – Col. 5, line 20, and equations 9-13.

As for claims 15-16, see Col. 6, line 34 – Col. 9, line 5; and, in particular, equations 30-36.

As for claim 21, the second column of page 641 of Kersey discloses the noise reduction values gained through an experimental run of the method. However, while this aren't in the

same range as the instant claim, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the ranges of the instant claim, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

As for claims 22 and 23, while Kersey fails to disclose the specific type of filter used in the canceling technique, Official Notice is taken as to the well known use of low-pass and pole filters in demodulation, and it would have been obvious to one of ordinary skill in the art to use such filters to perform the phase noise canceling technique of Kersey prior to the phase angle calculations.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-33 of copending Application No. 10/600099 in view of Kersey et al. Regarding the claims, the copending application's claims disclose the calculation of the phase angle independently of the demodulation phase offset and all of the specific steps in the dependent claims in their entirety.

However, the copending application fails to disclose the filtering of the output signal that is used to calculate the phase angle.

Kersey, however, discloses a passive phase noise canceling technique that relies on demodulation to filter an interferometric signal prior to its final demodulation and detection for any desired signal processing.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to filter the interferometric signal of Hall as per Kersey in order to reduce or cancel the induced phase noise in the interferometer so that the calculation of the phase angle of the sensor array can be performed on a cleaner signal that would allow for more accurate calculated results.

This is a provisional obviousness-type double patenting rejection.

Allowable Subject Matter

Claims 6-9 and 17-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. This would only apply if the double patenting rejection over all of the claims is overcome as well.

The following is a statement of reasons for the indication of allowable subject matter:

As to claims 6 and 17, the prior art of record, taken either alone or in combination, fails to disclose or render obvious the specific equations for calculating a quadrature term Qs that is substantially independent from the demodulation phase offset, and for calculating an in-phase term Is that is substantially independent from the demodulation phase offset, in combination with the rest of the limitations of the above claims. The prior art of record discloses equations for

calculating quadrature and in-phase terms, but they do not disclose the exact, specific equations in the instant claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Pat. 6,154,308 to Hall.

"Several facts have been relied upon from the personal knowledge of the examiner about which the examiner took Official Notice. Applicant must seasonably challenge well known statements and statements based on personal knowledge when they are made by the Board of Patent Appeals and Interferences. In re Selmi, 156 F.2d 96, 70 USPQ 197 (CCPA 1946); In re Fischer, 125 F.2d 725, 52 USPQ 473 (CCPA 1942). See also In re Boon, 439 F.2d 724, 169 USPQ 231 (CCPA 1971) (a challenge to the taking of judicial notice must contain adequate information or argument to create on its face a reasonable doubt regarding the circumstances justifying the judicial notice). If applicant does not seasonably traverse the well-known statement during examination, then the object of the well known statement is taken to be admitted prior art. In re Chevenard, 139 F.2d 71, 60 USPQ 239 (CCPA 1943). A seasonable challenge constitutes a demand for evidence made as soon as practicable during prosecution. Thus, applicant is charged with rebutting the well-known statement in the **next reply** after the Office action in which the well known statement was made."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A. Lyons whose telephone number is 571-272-2420. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley can be reached on 571-272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MAL
April 11, 2005